

COMPARISON OF BNP AND NT-PROBNP PERFORMANCES FOR ASSESSING HEART FAILURE IN A POPULATION OF PATIENTS WITH HIGH INCIDENCE OF WITH RENAL INSUFFICIENCY

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Background:

Heart failure (HF) is one of the most frequent cardiovascular diseases in the Western countries. Its prevalence in Europe varies from 0.4 to 2%.

The aim of the study was to compare the performances of BNP (Biosite®) and NT-proBNP(Roche®) for diagnosing heart failure (HF) in a population of patients with high incidence of chronic renal insufficiency (CRI, plasma creatinine >1,5mg/dl).

Patients and methods:

Ninety-eight patients :

➤ 47 men (mean age 76 ± 25 years) and 51 women (mean age 65 ± 38 years)

➤ 43 non CRI including 35 non HF and 55 CRI including 23 non HF pts

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Hospital of Liège

BNP and NT-proBNP determinations were performed by an immunofluorescent assay (Biosite®) and by an electrochemiluminescence sandwich immunoassay (Roche Diagnostic®), respectively.

Results and discussion:

In non CRI patients :

➤ mean BNP and NT-proBNP levels were 347 and 2375 pg/ml respectively

➤ the mean BNP/ NT-proBNP ratio was 8.65

In CRI patients :

➤ mean BNP and NT-proBNP levels were 1109 and 16374 pg/ml respectively

➤ the mean BNP/ NT-proBNP ratio was 14.76

We found a **better correlation** between the two peptides in the **non CRI group** ($R^2 = 0,93$) (Fig.1) than in the CRI group ($R^2 = 0,86$) (Fig.2). Using decision limits of **100pg/ml** for **BNP** and **125 (<75 y)** and **450 (> 75 y) pg/ml** for **NT-proBNP**, the sensitivity for pointing out HF patients in the whole population was 92% for BNP and 98% for NT-proBNP. The negative predictive values (NPV) were 90 and 94% respectively. The specificity was 43% for BNP and 31% for NT-proBNP. The predictive positive values (PPV) were 49% and 52%, respectively.

Correlation NT-proBNP and BNP in non CRF patients (n=43)

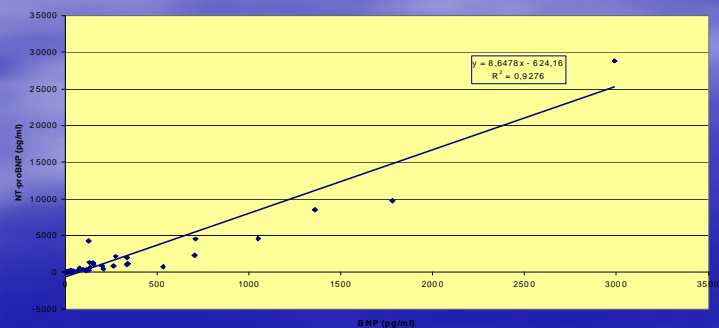


Fig.1

Correlation BNP and NT-proBNP in CRF patients (n=55)

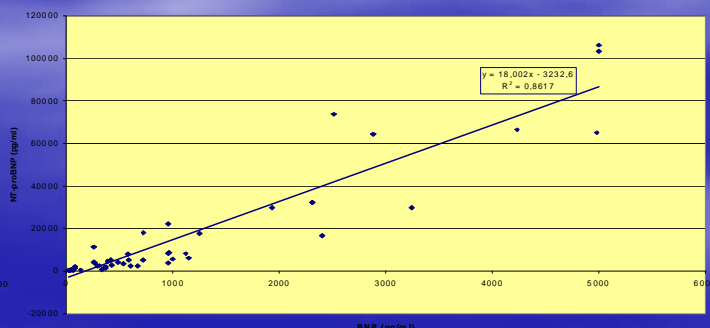


Fig.2

Conclusion:

BNP and NT-proBNP level are correlated in CRI and non CRI pts, but in renal insufficiency, NT-proBNP levels increase to a greater extent than BNP. Both assays are useful to rule out CRI pts suspected of HF. However, in renal failure pts, higher decision limits should be used for improving the positive predictive value of the assays.